Bancroft Mill Engine Trust Spring Newsletter 2019

Dear Member,

Well, we thought summer had come, but at present it seems to have reverted to more wintery conditions. There is a lot to be said for hibernation! I have been known to "nod off" over my key-board before now – although I prefer to think of it as being in deep thought.

So, what has been happening at the Mill since the last newsletter? You may remember that I told you that we had been forced to cancel the first Steam Day because the repairs to the Cornish boiler, and its associated tests, took far longer than we envisaged. This was not due to any lack of effort by our volunteers but simply the logistics of getting the various parties to come at the right time and in the right order. First the welders had to come, along with the boiler Inspector to witness the weld preparation. Then, having welded, the non-destructive testing of the welds had to take place and only then could an hydraulic test be done to prove soundness. But at least it was all satisfactory, and we were ready to steam

The first Steam Day occurred towards the end of March and saw a very large gathering of visitors. Unfortunately, we struggled to raise steam pressure to the required level that day, so could not run the two engines as often as we would have liked. The next steaming was far better and we again had a large influx of visitors.

The oil leak on the crank end of the main-shaft on the Eastwood engine had still been causing concern and young Phil and Jim H had been struggling desperately to sort out the problem, and at the last Steam Day it appeared that all their work had been successful. It is not an easy place to work as this photo tries to show. The vertical metal rod in this picture is one of the hold down bolts for the main bearing, the lighter vertical surface to the right is the wall of the bed casting – the crank is on the other side of this surface to the right The photo was taken holding the camera up against a gap less than two inches wide. It was through this gap that they had first managed to arrange a drip tray to collect the leaking oil before they finally managed to find the source of the leak above. Well done, those men.

As regards the Cornish boiler repairs, it is very worrying that the corrosion happened in an area of shell which had been replaced only a little over twenty years ago, whilst the main part of the boiler is well over one hundred years old. We are now convinced that attention must be given to regular water treatment. At the moment we are trying to get some experts to advise on the best method. It will not be cheap, but against the large amounts we have had to fork out, we are certain it will be the right course to follow. In the meantime, having spent half of the amount earmarked for re-pointing the chimney, we now have to start saving for that all over again!

We are very grateful for all donations and we have a small number of regular donors who donate by Standing Order each month. Between them they contribute nearly £1100 to our funds each year. If any of you would like to join this generous band please contact our Treasurer, either by writing to him at the mill address below or by email to treasurer@bancroftmill.org.uk

Something we always have to keep an eye on is the rope-drive from the Roberts engine to the second-motion wheel. If it ever became necessary to replace any of them, where would one find cotton rope and the skill to splice it? Not so easy in this world of electronics and hydraulic transmission.

When you think about it, ropes are probably the very earliest form of power transmission, dating back to the stone age. During recent times there have been developed such drives as gears, belts, chains, hydraulics, and direct drives, in addition to the rope.

The rope drive lent itself especially to the textile industry. It is flexible, reasonably cheap to install, quiet in operation, can drive in all sorts of configurations, and is long lasting.

Consider a mill driven by gearing from the engine. There is no flexibility and little room to accommodate misalignment. Installation is very expensive, and the noise levels can be horrendous. One or two teeth broken in such a system will bring the whole mill to a standstill. Belt drive may be cheaper (depending on what the belt is made of) but again the factory may be stopped if one breaks. Broad belts were also rather restricted in the speed at which they can be run, because at high speeds, air cushioning can take place, which causes the belt to slip. Sometimes belt pulleys were made with holes in the rim to counteract this, but it was never very successful.

The first rope drives were made from hemp, which proved to be only moderately successful because the life of such a rope was quite short. During the nineteenth century, cotton ropes were found to be far superior and became the mainstay (no pun intended) of the

textile industry. In the English system a number of belts or ropes were installed in parallel, each carrying a part of the load. The American system used only one rope, wrapped round and round the drive pulleys and joined at one end. It was much cheaper to install, but of course if the rope breaks, everything stops, whereas in the English system one rope breaking simply meant that the other ropes each shouldered a bit more of the load and you could carry on at least for a while. If cotton ropes are looked after and kept water-proofed, they can last an amazingly long time in service. They are far more flexible and elastic than any other fibre, and can be used without problems on all sizes of pulley wheels and on very short-centred drives, as well as over long distances. The rope drive on our Roberts engine is particularly short at about 21' 6" horizontally and 8' vertically.

Cotton rope drives are capable of transmitting considerable power for long periods. For instance, a 2" rope will be capable of say, 50 to 60 horse-power on the typical weaving shed engine, such as at Bancroft. Such systems always had extra ropes, so that, if one or two broke, or had to be removed, the factory could still continue to operate until it was convenient to replace the missing ropes. It used to be thought that rope speeds of between 4,000 and 5,000 feet per minute would result in loss of power because of centrifugal force causing the ropes to slip in their grooves. Later opinion was that because of the greater density of metal, the fly-wheel or pulley would probably burst first, before to rope started to lose its efficiency. The Bancroft ropes run at about 3,400 feet per minute, just a bit less than 40mph.

Bancroft's Robert's engine flywheel is grooved for 13 ropes. There were still 11 on when the Trust started, but two more had become a little too slack for comfort and were removed about 14 years ago. It would be an interesting exercise if we ever had to replace any ropes but as the ropes today only have to transmit the power to drive the second motion wheel and the line shafting through the Café we could probably manage with only three or four. Just in case we need it though, we have the instructions…..

How to Splice Driving Ropes.

Fig. 45.

Any description of the method of splicing driving ropes, however illustrated, is at best but an imperfect substitute for actual demonstration.

With the help of half-tone reproductions we have attempted to represent the process throughout its varied stages up to the complete splicing.

These views will, we are are persuaded, prove of great assistance to anyone possessing some knowledge of the handling of ropes, *e.g.*, a minder accustomed to attach mule bands, but to the totally uninitiated the study would naturally present greater difficulties.

In any case it will be wise to practice well upon such old ropes as may be at hand, repeating the operation until a degree of proficiency is attained, before attempting the more important work upon which driving efficiency and durability so much depend.

It should be observed that cotton ropes on account of their superior resilience, require slightly different treatment to hemp, particularly in the matter of simultaneously removing and replacing the strands, before the aperture has time to close.

The first process is that of ascertaining definite measurements.

We will suppose that the rope to be spliced is uncoiled and pulled straight, not tight, upon the floor. The nett length is then marked off with whippings of twine to the measure of a stout

The half strands are wrapped round those already inserted in both directions by the aid of a marlin spike, until within two revolutions of the whipping, when they are further reduced, leaving only the same thickness as that orginally peeled off. These are again worked round till they meet the remaining threads.

Fig. 51.

The use of the marlin spike, the manner of wrapping the reduced strands and of pulling them to the proper tension requires discretion, although well displayed in Figs. 50, and 51, which should be carefully studied.

Fig. 52

Every long splice contains three minor ones as above described, and as they are all worked out upon the same principle, it is not necessary to repeat the description.

Fig. 53.

In this illustration two or three splicings are finished, the whipping which has hitherto held the two strands together is removed, and the strands wound round each other as before.

Those are just two pages (1 and 4) of the five page leaflet. If you count the hands you will see that it needs three people at least and in our case they will be standing in the flywheel pit – not a lot of space! Any volunteers?

That is all for now, Jim Gill. www.bancroftmill.org.uk info@bancroftmill.org.uk

AGM Update

At the AGM held on 11th May there was an overwhelming and unanimous vote in favour of the proposal to transfer the assets and operations of Bancroft Mill Engine Trust to the newly formed Charity, Bancroft Mill Engine Museum (BMEM). This is a clear expression of your, the Members', view that the change is the right way to go. The transfer is intended to make the future of the Mill much more secure, especially in the current climate in which Trustees are harder and harder to find and in which the present BMET Trustees have no limit on their personal financial liability. This is a consequence of the way the BMET Deeds were drawn up and the limitations placed on us by Charity law. In contrast, BMEM is a Charitable Incorporated Organisation which means that its Trustees have a defined and limited liability, and it means that the Charity itself will be able to own the Mill, rather than it being held in Trust by Trustees.

We have written to our legal advisor and instructed him to begin the formal processes necessary to transfer the land to BMEM and to register that ownership with the Land Registry. We have also asked him to contact the Borough of Pendle Council and ensure that the required documentation with them is put in order. The process of transferring the assets of the Trust, both money and machinery, and formally passing the operating of the Mill from BMET to BMEM has also started.

We have sought legal advice on the precise wording of the documents necessary to effect this transfer, as one thing which we are keen to achieve is to ensure that any legacy which may have been left by some kind person to BMET can be properly accepted by BMEM. We have also sought to ensure that there is a clear and transparent link between BMET and BMET which is recorded by the Charity Commission. This we feel may help us in the future as, although BMEM is a new Charity, we can clearly demonstrate its origins from more than 30 years ago.

We are unable to say with certainty how long this transfer process will take. In the next Newsletter we shall keep you informed of how the transfer is progressing and any interesting news relating to it. So just watch the header – if it says "Bancroft Mill Engine Museum" you will know that we have been successful!

Ian McKay - Secretary BMET